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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,553

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Toshihiko Tanaka

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MCDERMOTT WILL & EMERY LLP
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER

JELSMA, JONATHAN G

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

03/17/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/551,553	Applicant(s) TANAKA, TOSHIHIKO	
	Examiner Jonathan Jelsma	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Summary

1. This is the second office action based on application 10/551,553 and in response to Applicant's Arguments/Remarks filed 12/17/2008.
2. Claims 1-17 are previously pending, of those claims, claims 1-12, and 14-17 have been canceled, and claim 13 has been amended. Claim 13 is currently pending and has been fully considered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over UNNO (US 5,933,219) in view of SASAKI (US 6,685,848).

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6. UNNO teaches a device manufacturing method for forming a semiconductor device (column 1 lines 8-12). UNNO teaches a reticle, or mask, with a pattern on it, that is provided in an exposure apparatus projecting onto a resist coated wafer (column 3 lines 10-18). An illumination system radiates light through the reticle to pattern the wafer (column 3 lines 15-18). An image of the circuit pattern on the reticle is formed then on the wafer using the linearly polarized light, to achieve the exposure of the wafer (column 3 lines 47-51). The wafer after exposure may then be subjected to development process to form a semiconductor device (column 4 lines 1-2). The reticle may include patterns such as 22, and 26 which are larger in a first direction, or the x-direction, than a second direction such as the y-direction (column 4 lines 36-45, see Fig. 2). The light is linearly polarized in the x-direction (column 4 lines 44-45). These patterns may form a hole.

7. SASAKI teaches an example of where the photomask used has a hole pattern to be transferred to the wafer (column 15 lines 36-37). This hole pattern may additionally be formed on a half-tone phase shift mask to have a very small dimensional difference between the coarse and dense portion of the hole patterns (column 15 lines 40-42).

8. At the time of the invention one having ordinary skill in the art would have been motivated to use the semiconductor production method of UNO to have the mask pattern of the hole pattern on a half tone phase shift mask as taught by SASAKI in order to transfer the desired pattern and achieve very small dimensional difference between the coarse and dense portions (SASAKI column 15 lines 40-42).

Response to Arguments

9. Applicant's arguments, see page 4 paragraph 2 of Applicant's Arguments/Remarks, filed 12/17/2008, with respect to objection to the disclosure have been fully considered and are persuasive. The objection of the disclosure has been withdrawn. The amendments to the specification has removed the hyperlinks, and overcomes the objection.

10. Applicant's arguments, see page 5 paragraph 2 of Applicant's Arguments/Remarks, filed 12/17/2008, with respect to the rejection(s) of claim(s) 13 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of UNNO and SASAKI.

11. As a preliminary matter, Examiner notes that the original Non-Final rejection was improperly cited to SASAKI (2002/0136967 A1), whereas it should have been cited to SASAKI (US 6,685,848), as noted in Applicant's Arguments/Remarks filed 12/17/2008.

12. On page 5 paragraph 2 of Applicant's Arguments/Remarks, Applicant argues that LIN is directed to an OPC technique performed based on the pattern orientation of a X-directional or Y-directional line patterns rather than a hole pattern. Applicant argues that the recited dimensional correction of the present claims is opposite to that disclosed by LIN, and that for a hole pattern, a different dimensional correction than that used for forming a line pattern is employed, and Applicant specifically points to the specification page 20, lines 18-19. This argument is persuasive.

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13. However, new grounds of rejection have been made in view of UNNO and SASAKI. Specifically UNNO teaches a mask pattern 22 which may form a hole, which is wider in the direction of the polarization light than in the direction orthogonal to it (see fig. 2).

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Jelsma whose telephone number is (571)270-5127. The examiner can normally be reached on Monday to Thursday 7:00 a.m. - 4:00 p.m.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571)272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark F. Huff/

Supervisory Patent Examiner, Art Unit 1795

JGJ